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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001

TIME: 09:45:06

Input Set : A:\78728106.app

Output Set: N:\CRF3\07262001\I833745.raw

P.S

ENTERED

3 <110> APPLICANT: ROBERTS, JOSEPH  
4 SETHURAMAN, NATARAJAN  
5 MACALLISTER, THOMAS  
7 <120> TITLE OF INVENTION: CLONING, OVEREXPRESSION AND THERAPEUTIC USE OF  
8 BIOACTIVE HISTIDINE AMMONIA LYASE  
10 <130> FILE REFERENCE: 078728/0106  
12 <140> CURRENT APPLICATION NUMBER: 09/833,745  
13 <141> CURRENT FILING DATE: 2001-04-13  
15 <150> PRIOR APPLICATION NUMBER: 60/197,770  
16 <151> PRIOR FILING DATE: 2000-04-14  
18 <160> NUMBER OF SEQ ID NOS: 66  
20 <170> SOFTWARE: PatentIn Ver. 2.1  
22 <210> SEQ ID NO: 1  
23 <211> LENGTH: 37  
24 <212> TYPE: PRT  
25 <213> ORGANISM: Artificial Sequence  
27 <220> FEATURE:  
28 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic  
29 polypeptide  
31 <400> SEQUENCE: 1  
32 Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu Gly  
33 1 5 10 15  
35 Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met  
36 20 25 30  
38 Gly Glu Gly Glu Ala  
39 35  
42 <210> SEQ ID NO: 2  
43 <211> LENGTH: 40  
44 <212> TYPE: PRT  
45 <213> ORGANISM: Artificial Sequence  
47 <220> FEATURE:  
48 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic  
49 polypeptide  
51 <400> SEQUENCE: 2  
52 Gly Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser  
53 1 5 10 15  
55 Leu Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val  
56 20 25 30  
58 Leu Met Gly Glu Gly Glu Ala Thr  
59 35 40  
62 <210> SEQ ID NO: 3  
63 <211> LENGTH: 287  
64 <212> TYPE: PRT  
65 <213> ORGANISM: Artificial Sequence  
67 <220> FEATURE:  
68 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic  
69 polypeptide

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71 &lt;400&gt; SEQUENCE: 3

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72 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
73   1           5           10           15
75 Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
76           20           25           30
78 Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
79           35           40           45
81 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
82           50           55           60
84 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
85   65           70           75           80
87 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
88           85           90           95
90 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
91           100          105          110
93 Ser Gly Arg Thr Gly Val Arg Pro Val Val Leu Glu Thr Met Val Gly
94           115          120          125
96 Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu
97           130          135          140
99 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu
100 145          150          155          160
102 Met Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val
103           165          170          175
105 Pro Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu
106           180          185          190
108 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
109           195          200          205
111 Leu Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp
112           210          215          220
114 Ala Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val
115 225          230          235          240
117 Phe Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly
118           245          250          255
120 Arg Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val
121           260          265          270
123 Ala Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser
124           275          280          285

```

127 &lt;210&gt; SEQ ID NO: 4

128 &lt;211&gt; LENGTH: 405

129 &lt;212&gt; TYPE: PRT

130 &lt;213&gt; ORGANISM: Artificial Sequence

132 &lt;220&gt; FEATURE:

133 &lt;223&gt; OTHER INFORMATION: Description of Artificial Sequence: Synthetic

134 polypeptide

136 &lt;400&gt; SEQUENCE: 4

```

137 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
138   1           5           10           15
140 Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
141           20           25           30

```

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```

143 Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
144          35          40          45
146 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
147          50          55          60
149 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
150 65          70          75          80
152 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
153          85          90          95
155 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
156          100          105          110
158 Ser Gly Arg Thr Gly Val Arg Pro Val Val Leu Glu Thr Met Val Gly
159          115          120          125
161 Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu
162          130          135          140
164 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu
165 145          150          155          160
167 Met Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val
168          165          170          175
170 Pro Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu
171          180          185          190
173 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
174          195          200          205
176 Leu Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp
177          210          215          220
179 Ala Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val
180 225          230          235          240
182 Phe Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly
183          245          250          255
185 Arg Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val
186          260          265          270
188 Ala Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu
189          275          280          285
191 Arg Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His
192          290          295          300
194 Ala Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ala Ile Asp Asn Pro
195 305          310          315          320
197 Val Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly
198          325          330          335
200 Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp
201          340          345          350
203 Leu Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala
204          355          360          365
206 Arg Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp
207          370          375          380
209 Ser Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu
210 385          390          395          400
212 Asn Lys Arg Leu Ala
213          405
216 <210> SEQ ID NO: 5

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## RAW SEQUENCE LISTING

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Input Set : A:\78728106.app

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217 <211> LENGTH: 513
218 <212> TYPE: PRT
219 <213> ORGANISM: Artificial Sequence
221 <220> FEATURE:
222 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
223     polypeptide
225 <400> SEQUENCE: 5
226 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
227   1           5           10           15
229 Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
230           20           25           30
232 Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
233           35           40           45
235 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
236           50           55           60
238 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
239   65           70           75           80
241 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
242           85           90           95
244 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
245           100          105          110
247 Ser Gly Arg Thr Gly Val Arg Pro Val Val Leu Glu Thr Met Val Gly
248           115          120          125
250 Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu
251           130          135          140
253 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu
254 145           150          155          160
256 Met Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val
257           165          170          175
259 Pro Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu
260           180          185          190
262 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
263           195          200          205
265 Leu Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp
266           210          215          220
268 Ala Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val
269 225           230          235          240
271 Phe Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly
272           245          250          255
274 Arg Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val
275           260          265          270
277 Ala Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu
278           275          280          285
280 Arg Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His
281           290          295          300
283 Ala Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ala Ile Asp Asn Pro
284 305           310          315          320
286 Val Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly
287           325          330          335

```

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Input Set : A:\78728106.app

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```

289 Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp
290           340           345           350
292 Leu Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala
293           355           360           365
295 Arg Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp
296           370           375           380
298 Ser Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu
299 385           390           395           400
301 Asn Lys Arg Leu Ala Val Pro Ala Ser Val Asp Ser Ile Pro Ser Ser
302           405           410           415
304 Ala Met Gln Glu Asp His Val Ser Leu Gly Trp His Ala Ala Arg Lys
305           420           425           430
307 Leu Arg Thr Ser Val Ala Asn Leu Arg Arg Ile Leu Ala Val Glu Met
308           435           440           445
310 Leu Ile Ala Gly Arg Ala Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly
311           450           455           460
313 Pro Ala Thr Gly Ala Val Leu Glu Val Leu Arg Ser Lys Val Ala Gly
314 465           470           475           480
316 Pro Gly Gln Asp Arg Phe Leu Ser Ala Glu Leu Glu Ala Ala Tyr Asp
317           485           490           495
319 Leu Leu Ala Asn Gly Ser Val His Lys Ala Leu Glu Ala His Leu Pro
320           500           505           510
322 Ala

```

325 &lt;210&gt; SEQ ID NO: 6

326 &lt;211&gt; LENGTH: 511

327 &lt;212&gt; TYPE: PRT

328 &lt;213&gt; ORGANISM: Artificial Sequence

330 &lt;220&gt; FEATURE:

331 &lt;223&gt; OTHER INFORMATION: Description of Artificial Sequence: Formula polypeptide

333 &lt;220&gt; FEATURE:

334 &lt;221&gt; NAME/KEY: MOD\_RES

335 &lt;222&gt; LOCATION: (1)..(9)

336 &lt;223&gt; OTHER INFORMATION: Variable amino acid

338 &lt;220&gt; FEATURE:

339 &lt;221&gt; NAME/KEY: MOD\_RES

340 &lt;222&gt; LOCATION: (11)

341 &lt;223&gt; OTHER INFORMATION: Variable amino acid

343 &lt;220&gt; FEATURE:

344 &lt;221&gt; NAME/KEY: MOD\_RES

345 &lt;222&gt; LOCATION: (14)

346 &lt;223&gt; OTHER INFORMATION: Variable amino acid

348 &lt;220&gt; FEATURE:

349 &lt;221&gt; NAME/KEY: MOD\_RES

350 &lt;222&gt; LOCATION: (17)


351 &lt;223&gt; OTHER INFORMATION: Variable amino acid

353 &lt;220&gt; FEATURE:

354 &lt;221&gt; NAME/KEY: MOD\_RES

355 &lt;222&gt; LOCATION: (20)

356 &lt;223&gt; OTHER INFORMATION: Variable amino acid


**Use of n and/or Xaa has been detected in the Sequence Listing.**  
 Review the Sequence Listing to insure a corresponding  
 explanation is presented in the <220> to <223> fields of  
 each sequence using n or Xaa.

## VERIFICATION SUMMARY

PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001

TIME: 09:45:07

Input Set : A:\78728106.app

Output Set: N:\CRF3\07262001\I833745.raw

L:824 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:827 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:830 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:833 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:836 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:839 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:842 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:845 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:848 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:851 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:854 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:857 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:860 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:863 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:866 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:869 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:872 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:875 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:878 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:881 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:884 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:887 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:890 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:893 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:896 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:899 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:902 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:905 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:908 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:911 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:914 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:917 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:1694 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1697 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1700 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1703 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1706 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1709 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1712 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1715 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1718 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1724 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1727 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1730 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1733 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1736 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1739 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11  
L:1742 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11

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L:1745 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11

L:1748 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11